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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/466,961 12/20/99 CHANG

Y 8733.20050

EXAMINER

MM91/1026

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BROCK I.P.

ART UNIT

PAPER NUMBER

2815  
DATE MAILED:

10/26/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/466,961	CHANG ET AL.	
	Examiner	Art Unit	
	Paul E Brock II	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 August 2001.
- 2a) ☒ This action is FINAL.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 9, 10 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9, 10 and 13-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 31 August 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. | 6) <input type="checkbox"/> Other:  |

## **DETAILED ACTION**

### ***Drawings***

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 8-31-01 has been approved.

### ***Claim Objections***

2. Claims 11 and 16 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 1 claims "a transparent conductive material that is in contact with the active layer and claim 15 claims "a transparent conducting layer that is in contact with said active layer". Claims 11 and 16 contain the subject matter "wherein the transparent conducting layer also contacts the active layer". It seems that claims 11 and 16 do not further limit the parent claim.

3. Claim 9 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 2. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 15 – 20 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is not clear where in the originally filed specification support can be found for “an opaque metal layer” as claimed in claims 15 and 18.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1 – 4 and 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear how the source electrode is being defined with respect to the active area. The relationship is first defined as the “source and drain electrodes made from a transparent conductive material that is in contact with the active layer” and then further limited to “an ohmic contact layer disposed between the active layer and the source electrode.” It is not clear how there can be an ohmic contact layer between the source electrode and the active layer if the transparent conductive material of the source electrode is in contact with the active layer.

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8. Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear what “a hole barrier layer between the semiconductor layer and at least one of the first and second electrodes.” in claim 13, or “a hole barrier layer between the semiconductor layer and at least one of the source and drain electrodes.” in claim 14 is. The claim language does not set forth a standard for which one of ordinary skill in the art could make and use the claimed invention as it relates to “a hole barrier layer”.

*Claim Rejections - 35 USC § 102*

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 18 – 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawai et al. (USPAT 581133, Kawai).

Kawai discloses in figure 10 a gate electrode on a substrate (21). Kawai discloses in figure 2 an insulating layer (31) over the gate electrode. Kawai discloses in figure 10 a semiconductor layer on the insulating layer and adjacent the gate electrode, wherein the semiconductor layer includes an active layer (33) and a contact layer (34). Kawai discloses in figure 10 spaced apart first and second electrodes that electrically contact the contact layer as

to define a channel region. Kawai discloses in figure 10 wherein the second electrode of the TFT is a dual layer structure comprised of a transparent conducting layer (35) that electrically contacts the contact layer and of a metal layer (27) over the transparent conducting layer.

With regard to claim 19, Kawai discloses in figure 10 wherein the transparent conducting layer contacts the active layer.

With regard to claim 20, Kawai discloses in figure 10 wherein the transparent conducting layer contacts a side of the active layer.

*Claim Rejections - 35 USC § 103*

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 2, 4, 9 and 15 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Kawai.

The applicant's admitted prior art discloses in figure 1 an optical detecting sensor.

With regard to claim 1, the applicant's admitted prior art discloses in figure 1 a sensor thin film transistor (TFT) (C) generating optical current by incident light reflected from an object. The applicant's admitted prior art discloses in figure 1 a storage capacitor storing charges of the optical current generated in the sensor thin film transistor. The applicant's admitted prior art discloses in figure 1 a switching TFT (A) controlling a release of the stored charges of the storage capacitor to an external circuit for display of an image of the object, the switching TFT

having a gate electrode (15), an insulating layer (17) on the gate electrode, an active layer (21) on the insulating layer, and source and drain electrodes that are comprised of first source and drain electrodes made from a transparent conductive material that is in contact with the active layer. The applicant's admitted prior art discloses in figure 1 an ohmic contact layer (25) disposed between the active layer and the source electrode. The applicant's admitted prior art discloses in figure 1 does not disclose that the switching TFT has dual layered source and drain electrodes of a transparent conducting material and a metal material. Kawai teaches in figure 10 source and drain electrodes that are comprised of first source and drain electrodes (35) made from a transparent conductive material that is in contact with an active layer and second source and drain electrodes (27 and 28) comprised of metal material on the first source and drain electrodes. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use a dual-layered structured source and drain electrodes of Kawai in the switching TFT of the applicant's admitted prior art in order to transmit signals applied to each pixel electrode, and to turn on and off the signals separately for each pixel.

With regard to claim 2, Kawai teaches in column 8, lines 38 – 41 wherein the metal for the dual layered source and drain electrodes is a substantially non-transparent metal material.

With regard to claim 4, Kawai discloses in column 8, lines 31 – 33 that the transparent conducting material is indium tin oxide.

With regard to claim 9, Kawai teaches in column 8, lines 38 – 41 wherein the metal material is a substantially non-transparent metal material.

With regard to claim 15, the applicant's admitted prior art discloses in figure 1 a sensor TFT (having a gate electrode (11) and spaced apart first and second sensor electrodes. The

applicant's admitted prior art discloses in figure 1 a switching TFT comprised of: a gate electrode (15) on a transparent substrate (10); an insulating layer (17) over the gate electrode; a semiconductor layer on the insulating layer and adjacent the gate electrode wherein the semiconductor layer includes an active layer (29) and a contact layer (25); spaced apart first and second switching electrodes (31a and 31b) on the semiconductor layer that define a channel region, wherein the second switching electrode electrically contacts the contact layer. The applicant's admitted prior art discloses in figure 1 a storage capacitor having a first storage electrode (13) and a second storage electrode (29), wherein the second storage electrode of the storage capacitor connects to the first sensor electrode and to the second switching electrode. The applicant's admitted prior art discloses in figure 1 wherein the second switching electrode is a transparent conducting layer that is in contact with the active layer. The applicants admitted prior art does not disclose that the second switching electrode is a dual layer structure. Kawai teaches in figure 10 a dual layered switching electrode is comprised of transparent conductive material (35) that is in contact with an active layer and a metal layer over the transparent conductive layer. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use a dual-layered structured electrode of Kawai in the switching TFT of the applicant's admitted prior art in order to transmit signals applied to each pixel electrode, and to turn on and off the signals separately for each pixel.

With regard to claim 16, the applicant's admitted prior art discloses in figure 1 that the transparent conducting layer also contacts the active layer.

With regard to claim 17, the applicant's admitted prior art discloses in figure 1 wherein the transparent conducting layer contacts a side of the active layer.



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13. Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art and Kawai as applied to claim 1 above, and further in view of den Boer et al. (USPAT 5656824, den Boer).

With regard to claim 3, the applicant's admitted prior art and Kawai do not disclose the metal for the dual layered source and drain regions comprises chrome. den Boer teaches column 5, line 50 a metal layer of chrome for a dual layer source electrode. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use chrome as the metal material in the dual layered electrodes of the applicant's admitted prior art and Kawai in order to have a material that is sufficiently not transparent.

With regard to claim 10, the applicant's admitted prior art and Kawai do not disclose that the transparent conducting material layer and the metal material layer each contact the contact layer. den Boer teaches in figure 2 a source electrode wherein a transparent conducting material (42) and the metal material (40) each contact a contact layer (34). It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the contacting of both the transparent conducting material and the metal material to the contact of den Boer in the device of the applicant's admitted prior art and Kawai in order to permit the TFT to selectively energize a corresponding pixel in the LCD as stated by den Boer in column 5, lines 29 - 35. The applicant's admitted prior art discloses in figure 1 that a source and drain electrode can be the same. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use a drain electrode that is exactly the same as the dual layered source electrode of

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den Boer in the switching TFT of the applicant's admitted prior art, Kawai and den Boer in order to simplify processing steps as is well known in the art.

14. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of den Boer et al..

The rejections of claims 13 and 14 can be found in the previous office action and are still valid.

#### *Response to Arguments*

15. Applicant's arguments with respect to claims 1 - 4, 9 and 10 have been considered but are moot in view of the new ground(s) of rejection.

16. With regard to applicant's arguments concerning claims 13 and 14, it is not understood what "withdrawn from consideration" means as it pertains to these claims. Claims cannot be withdrawn from consideration without a restriction requirement. No restriction requirement has been given with regard to this application.

#### *Conclusion*


17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

  
Paul E Brock II  
October 23, 2001

  
EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800